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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BAUM, RONALD

ART UNIT	PAPER NUMBER
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2135

DATE MAILED: 04/05/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/675,113

Applicant(s)

HALE ET AL.

Examiner

Ronald Baum

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-24 and 26-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-24 and 26-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. Claims 1,2,4-24 and 26-33 are pending for examination.
2. Claims 1,2,4-24 and 26-33 remain rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2,4-24 and 26-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiedemer, U.S. Patent 4,796,181.
4. As per claim 1; “Embodied in a memory component, a digitally signed image [col. 6, lines 3-61, col. 7, lines 31-57] comprising [ABSTRACT, figure 1; the examiner broadly interprets the phrase memory component to encompass the collective memory of the computer that would include all memory accessible to the computers CPU, including memory (i.e., application or BIOS prompts, etc.) residing on plug-in or peripheral boards (the security module) in addition to the standard cache, DRAM, etc.]: a post-relocation image being a result formed by alteration of pre-relocation image of a software module upon loading of the image into the memory component [figure 2 and accompanying description, col. 2, lines 33-49, col. 3, lines 32- col. 4, line 2, col. 9, lines 54-68, col. 10, lines 1- col. 11, line 38, col. 11, line 51- col. 12, line 24, col. 15, lines 18-23, 38-44]; information to convert the pre-location image to the post-relocation image [col. 5, lines 7-23]; and a digital signature based on the image [col. 13, lines 3-14].”;

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And further as per claim 24; “An electronic device comprising [This claim is the embodied in software of claim 1, with a processor, and is the said embodied software is rejected for the same reasons provided for the claim 1 rejection above, while the teachings of Wiedemer clearly include a processor (abstract, figures 1 and accompanying descriptions)]: a processor; and a non-volatile memory component in communication with the processor, the non-volatile memory component includes including a post-relocation image being an image of a software module altered during relocation in which an address associated with the image is adjusted before loading the post-re-location image into the memory component, information to convert the image into the post-relocation image, and a digital signature based on the image of the software module.”.

5. Claim 2 ***additionally recites*** the limitations that; “The digitally signed image of claim 1, wherein the digital signature is a hash value of the image digitally signed by a private key of a selected signatory. ”. The teachings of Wiedemer (col. 5, lines 51-58) suggest such limitations;

6. Claim 4 ***additionally recites*** the limitations that; “The digitally signed image of claim 1, wherein the information includes offsets for addressing routines within the software module.”. The teachings of Wiedemer (figure 2 and accompanying description relating to at least “relocate any mis-located instructions”, col. 5, lines 61-68, col. 9, lines 54-68, col. 10, lines 1-62, col. 11, lines 54-63) suggest such limitations;

And further as per claim 26; “The electronic device of claim 24 [This claim is the embodied in software of claim 4, with a processor, and is the said embodied software is rejected for the same reasons provided for the claim 4 rejection above, while the teachings of Wiedemer clearly include a processor (abstract, figures 1 and accompanying descriptions)], wherein the

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information placed within the non-volatile memory component includes an offset from a starting address of the image of the software module.”.

7. Claim 5 *additionally recites* the limitations that; “The digitally signed image of claim 4, wherein the offsets are generated after the software module is compiled and placed into an executable format.”. The teachings of Wiedemer (figure 2 and accompanying description relating to at least “relocate any mis-located instructions”, col. 5, lines 61-68, col. 9, lines 54-68, col. 10, lines 1-62, col. 11, lines 54-63) suggest such limitations.

8. As per claim 6; “Embodied in a memory component, a digitally signed image comprising: a Bound & Relocated Import Table (BRIT); an import table; an export table; an image of a software module; and a digital signature based on the import table, the export table and the image [figure 2 and accompanying description, col. 2, lines 33-49, col. 3, lines 32-col. 4, line 2, col. 9, lines 54-68, col. 10, lines 1-col. 11, line 38, col. 11, line 51-col. 12, line 24, col. 15, lines 18-23, 38-44, whereas the phrases “Bound & Relocated Import Table (BRIT); an import table; an export table” taken in the broadest meaning of the words is the software (firmware) module segments re-location information, *inherently linked in the post compiled* state, distributed (as modules) as part of the application across the memory space. Further, this is claim 1 with the limitation of more explicitly describing the inherent linking and address resolution of ‘inter’ and ‘intra’ software modules, post compilation, (i.e., the inherently specific function of the linker in the software development design), as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 1.].”;

And further as per claim 27; “An electronic device comprising [This claim is the embodied in software of claim 6, with a processor, and is the said embodied software is rejected

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for the same reasons provided for the claim 6 rejection above, while the teachings of Wiedemer clearly include a processor (abstract, figures 1 and accompanying descriptions)]: a processor; and a memory in communication with the processor, the memory being loaded with a Bound & Relocated Import Table (BRIT), an import table, an export table, an image of a software module, and a digital signature based on the import table, the export table and the image.”.

9. Claim 7 ***additionally recites*** the limitations that; “The digitally signed image of claim 6, wherein the import table comprises a plurality of entries, each entry includes an identifier that indicates what segment of information contained in another digitally signed image is required by the image.”. This is a claim 6 limitation of more explicitly describing the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, post compilation, (i.e., the inherently specific function of the linker in the software development design), as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 6;

And further as per claim 28; “The electronic device of claim 27 [This claim is the embodied in software of claim 7, with a processor, and is the said embodied software is rejected for the same reasons provided for the claim 7 rejection above, while the teachings of Wiedemer clearly include a processor (abstract, figures 1 and accompanying descriptions)], wherein the import table loaded within the memory comprises a plurality of entries, each entry includes an identifier that indicates what segment of information contained in another digitally signed image is required by the image.”.

10. Claim 8 ***additionally recites*** the limitations that; “The digitally signed image of claim 7, wherein the identifier includes a unique sequence of byte values.”. This is a claim 7 limitation of more explicitly describing the inherent linking, address, and *symbol* resolution of ‘inter’ and

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‘intra’ software modules, post compilation, (i.e., the inherently specific function of the linker in the software development design), whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 7;

And further as per claim 29; “The electronic device of claim 28 [This claim is the embodied in software of claim 8, with a processor, and is the said embodied software is rejected for the same reasons provided for the claim 8 rejection above, while the teachings of Wiedemer clearly include a processor (abstract, figures 1 and accompanying descriptions)], wherein the identifier associated with a particular entry include a unique sequence of byte values.”.

11. Claim 9 ***additionally recites*** the limitations that; “The digitally signed image of claim 7, wherein the identifier includes a unique sequence of alphanumeric characters.”. This is a claim 7 limitation of more explicitly describing the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, post compilation, (i.e., the inherently specific function of the linker in the software development design), whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 7.

12. Claim 10 ***additionally recites*** the limitations that; “The digitally signed image of claim 7, wherein each entry of the import table further includes an offset to a corresponding entry of the

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BRIT.”. This is a claim 7 limitation of more explicitly describing the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, for both *calling* and *called* aspects (i.e., import and export in the form of a table(s)) of function reference, post compilation, (i.e., the inherently specific function of the linker in the software development design); whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 7.

13. Claim 11 *additionally recites* the limitations that, “The digitally signed image of claim 6, wherein the export table includes a plurality of entries forming a listing of segments of information contained in the image, a selected entry of the plurality of entries includes an identifier of a segment of information associated with the segments of information.”. This is a claim 6 limitation of more explicitly describing the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, for both *calling* and *called* aspects (i.e., import and *export* in the form of a table(s)) of function reference, post compilation, (i.e., the inherently specific function of the linker in the software development design); whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 6;

And further as per claim 30; “The electronic device of claim 27 [This claim is the embodied in software of claim 11, with a processor, and is the said embodied software is rejected

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for the same reasons provided for the claim 11 rejection above, while the teachings of Wiedemer clearly include a processor (abstract, figures 1 and accompanying descriptions)], wherein the export table includes a plurality of entries forming a listing of segments of information contained in the image, a selected entry of the plurality of entries includes an identifier of a segment of information associated with the segments of information. ”.

14. Claim 12 *additionally recites* the limitations that; “The digitally signed image of claim 11, wherein the selected entry further includes a second offset being an offset from a starting address of the digitally signed image to an address location of the segment of information. ”. This is a claim 11 limitation of more explicitly describing the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, for both *calling* and *called* aspects (i.e., import and *export* in the form of a table(s), both *direct and indirect* (1st, 2nd, etc., level of offsets)) of function reference, post compilation, (i.e., the inherently specific function of the linker in the software development design); whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 11.

15. As per claim 13; “A method comprising [This claim is a method of the apparatus (device) claim 1, and is rejected for the same reasons provided for the claim 1 rejection above]: reconverting a post-relocation image of a digitally signed image [col. 6, lines 3-61, col. 7, lines 31-57] back to a pre-relocation image, the pre-relocation image being art image of a software module prior to relocation where an address with the digitally signed image is changed [figure 2

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and accompanying description, col. 2, lines 33-49, col. 3, lines 32-col. 4, line 2, col. 9, lines 54-68, col. 10, lines 1-col. 11, line 38, col. 11, line 51-col. 12, line 24, col. 15, lines 18-23, 38-44]; conducting a hash operation on the reconverted, pre-relocation image to produce a reconverted hash value [col. 13, lines 3-14]; recovering a hash value from a digital signature contained in the digitally signed image, the hash value is based on the pre-relocation image of the software module; and comparing the hash value to the reconverted hash value.”. Also, the authentication and verification functions of Wiedemer (i.e., see figure 2) correspond to the applicant’s comparison of reconverted hash to image hash (signature);

And further as per claim 31; “Embodied in a processor readable medium for execution by a processor, a software program [This claim is the embodied in software method of the method claim 13, and is rejected for the same reasons provided for the claim 13 rejection above] comprising a first software module to reconvert a post-relocation image of a digitally signed image back to a pre-relocation image, the pre-relocation image being an image of a software module prior to adjustment of an address corresponding to an address location allotted for the post-relocation image; a second software module to conduct a hash operation on the reconverted, pre-relocation image to produce a reconverted hash value; a third software module to recover a hash value from a digital signature contained in the digitally signed image, the hash value is based on the image of the software module; and a fourth software module to compare the hash value to the reconverted hash value.”.

16. Claim 14 ***additionally recites*** the limitations that; “The method of claim 13 further comprising: determining that an integrity of the post-relocation image remains intact if the hash value [col. 13, lines 3-14] matches the reconverted hash value.”. The teachings of Wiedemer

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(figure 2, the authentication and verification functions of Wiedemer correspond to the applicant's comparison of reconverted hash to image hash (signature)) suggest such limitations;

And further as per claim 32; "The software program of claim 31 [This claim is the embodied in software method of the method claim 14, and is rejected for the same reasons provided for the claim 14 rejection above] further comprising: a fifth software module to determine that an integrity of the post-relocation image remains intact if the hash value matches the reconverted hash value. "

17. Claim 15 *additionally recites* the limitations that; "The method of claim 13 further comprising: determining that the post-relocation image has been modified beyond any modification caused by relocation when the hash value [col. 13, lines 3-14] fails to match the reconverted hash value.". The teachings of Wiedemer (figure 2, the authentication and verification functions of Wiedemer correspond to the applicant's comparison of reconverted hash to image hash (signature)) suggest such limitations;

And further as per claim 33; "The software program of claim 31 [This claim is the embodied in software method of the method claim 15, and is rejected for the same reasons provided for the claim 15 rejection above] further comprising a sixth software module to determine that the post-relocation image has been modified beyond any modifications caused by relocation when the hash value fails to match the reconverted hash value. "

18. Claim 16 *additionally recites* the limitations that; "The method of claim 13, wherein the hash operation is a one-way hash operation.". The teachings of Wiedemer (figure 2, the authentication and verification functions of Wiedemer correspond to the applicant's comparison of reconverted hash to image hash (signature)) suggest such limitations.

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19. As per claim 17; “A method for generating a Bound & Relocated Import Table (BRIT) within an electronic device, comprising: (a) locating an import table for a first digitally signed image loaded within the electronic device, each entry of the import table including an identifier and a first offset; (b) accessing an identifier within a selected entry of the first digitally signed image; (c) determining whether the identifier matches an identifier within an export table of a second digitally signed image loaded within the electronic device, the identifier for the export table is stored with a corresponding second offset; and (d) upon determining that the identifier within the selected entry matches the identifier within the export table, producing an address by combining the second offset with a starting address of the second digitally signed image, and loading the identifier within the selected entry and the address into an entry of the BRIT. ”. This is the claims 6-8,10,11 limitations of more explicitly describing the inherent part of the Wiedemer *embedding of the software, post design/ generation*, with the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, for both *calling* and *called* aspects (i.e., import and *export* in the form of a table(s)) of function reference, post compilation, (i.e., the inherently specific function of the linker in the software development design); whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claims 6-8,10,11.

20. Claim 18 ***additionally recites*** the limitations that; “The method of claim 17 further comprising: repeating the operations of (a)-(d) for each remaining entry of the import table for loading resultant address and identifier pairs into different entries of the BRIT.”. This is claim 17

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where multiple segments, images, and software modules (developed, compiled, linked, and embedded) are involved, and it would be inherent in the Wiedemer invention for multiple application (i.e., BIOS functions / module segments) modules (i.e., figure 2 and accompanying description), to be involved as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 17.

21. Claim 19 *additionally recites* the limitations that; “The method of claim 17, wherein the; producing of the address by combining the second offset with the starting address of the second digitally signed image comprises an arithmetic operation. ”. This is claim 17 where multiple segments, images, and software modules (developed, compiled, linked, and embedded) are involved, and it would be inherent in the Wiedemer invention for multiple application (i.e., BIOS functions / module segments) modules (i.e., figure 2 and accompanying description) to have the linking process occur in software such that the offset symbol (label) and address resolution would use arithmetic operations, as per the inherent aspects of the teachings of the Wiedemer invention, and is rejected on the same basis as claim 17.

22. Claim 20 *additionally recites* the limitations that; “The method of claim 17, wherein prior to locating an import table for the first digitally signed image, the method further comprises locating a plurality of digitally signed images loaded within the electronic device.”. This is claim 17 where multiple segments, images, and software modules (developed, compiled, linked, and embedded) are involved, and it would be inherent in the Wiedemer invention for multiple application (i.e., BIOS functions / module segments) modules (i.e., figure 2 and accompanying description), to be involved as per the teachings of the Wiedemer invention, and is rejected on the same basis as claim 17.

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23. As per claim 21; “A method comprising: verifying an integrity of a plurality of digitally signed images loaded in an electronic device, the plurality of digitally signed images includes a first digitally signed image and a second digitally signed image; determining whether an identifier in an import table of the first digitally signed image matches an identifier in an export table of the second digitally signed image; and determining whether an entry of a Bound & Relocated Import Table (BRIT) corresponding to the identifier in the import table points to an address defined by the identifier in the export table. ”. This is the claims 12,18-20 limitations of more explicitly describing the inherent part of the Wiedemer *verifying and authentication of the software, post design/ generation*, for plural cases of verifiable software instances, with the inherent linking, address, and *symbol* resolution of ‘inter’ and ‘intra’ software modules, for both *calling* and *called* aspects (i.e., import and *export* in the form of a table(s)) of function reference, post compilation, (i.e., the inherently specific function of the linker in the software development design); whereas, it is also inherent that such symbols in the multi-segment module(s) would have a unique ID (i.e., sequence of bytes, inclusive of the representation of said bytes as alphanumeric or “binary”, hexadecimal, etc.) for the compiling and linking process to work correctly, as per the teachings of the Wiedemer invention, and is rejected on the same basis as claims 12,18-20.

24. Claim 22 ***additionally recites*** the limitations that; “The method of claim 21, wherein the verifying the integrity of the plurality of digitally signed images includes performing a hash operation on the import table, the export table and an image of the first digitally signed image to produce a first resultant hash value; recovering a first hash value from a digital signature contained in the first digitally signed image; and comparing the first hash value with the first

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resultant hash value.”. The teachings of Wiedemer (the authentication and verification functions (i.e., see figure 2) correspond to the applicant’s comparison of reconverted hash to image hash (signature)) suggest such limitations.

25. Claim 23 *additionally recites* the limitations that; “The method of claim 22, wherein the verifying the integrity of the plurality of digitally signed images further comprises performing a hash operation on an import table, an export table and an image of the second digitally signed image to produce a second resultant hash value; recovering a second hash value from a digital signature contained in the second digitally signed image; and comparing the second hash value with the second resultant hash value. ”. The teachings of Wiedemer (the authentication and verification functions (i.e., see figure 2) correspond to the applicant’s comparison of reconverted hash to image hash (signature)) suggest such limitations.

Response to Arguments

26. As per applicant’s arguments concerning the Davis reference not teachings or suggesting the storage of a post-re-location image, the argument is moot in that the claims in question is rejected based on Wiedemer as a result of amended limitations to said claims. The Wiedemer reference teaches and more clearly suggests the storage of a post-re-location image, and those additional limitations recited in the claim language.

27. As per applicant’s arguments concerning the Davis reference not teachings or suggesting the reconvert of the post-relocation image back to the pre-relocation image, and dealing with the hash information, checking, etc., the argument is moot in that the claims in question is rejected based on Wiedemer as a result of amended limitations to said claims. The Wiedemer

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reference teaches and more clearly suggests the reconverting of the pre-relocation image, and dealing with the hash information, checking, etc., and those additional limitations recited in the claim language.

28. As per applicant's arguments concerning the examiners misinterpretation of the phrases BRIT, import table & export table relative to the software modules involved in the applicants invention, the examiner respectfully disagrees and maintains that such an interpretation is proper in view of the applicants failure to claim any such relationship between the BRIT, etc., and any software module equivalence in the claim language.

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

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30. Any inquiry concerning this communication or earlier communications from examiner should be directed to Ronald Baum, whose telephone number is (703) 305-4276. The examiner can normally be reached Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh, can be reached at (703) 305-9648. The Fax numbers for the organization where this application is assigned are:

After-final (703) 746-7238

Official (703) 746-7239

Non-Official/Draft (703) 746-7246

Ronald Baum

Patent Examiner


AYAZ SHEIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100